

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (original): A computer-readable medium having embodied thereon a computer program for a method of ~~A device for~~ detecting a road traveling lane, from images on a road surface continuously picked up by image pickup means, the method comprising:

~~edge point detection means for~~ detecting a plurality of edge points in a contour on the image;

~~segment group producing means for~~ producing a plurality of segment groups by providing a line segment for the plurality of edge points ~~detected by said edge point detection means~~, on the basis of continuity of distance and direction between neighboring edge points, and grouping a plurality of line segments having a predetermined relationship with each other, to produce each of the plurality of segment groups ~~a segment group~~;

~~curve detection means for~~ detecting a curve fitted to each of the plurality of segment groups ~~the segment group produced by said segment group producing means~~; and

~~lane boundary position defining means for~~ comparing a plurality of curves distributed in the vicinity of right and left lane boundaries out of the ~~detected curves with the segment groups detected by said curve detection means~~, with the segment groups produced by said segment group producing means, to define a position of one curve as an innermost marking line, when a segment group forming a curve closest to the center of said traveling lane has a predetermined length and repeated cycle, and to define a position of a neighboring curve, outside of said

innermost marking line relatively to the center of said traveling lane, as a position of a boundary of said traveling lane.

2. (currently amended): ~~The computer-readable medium~~A device for detecting a road traveling lane as described in claim 1, wherein said segment group producing means produces one of said segment groups ~~includes for a group including~~ a predetermined line segment and another line segment provided in an area of the predetermined distance and direction relative to the predetermined line segments in said plurality of line segment.

3. (currently amended): ~~The computer-readable medium~~A device for detecting a road traveling lane as described in claim 1, wherein said segment group producing means provides one of said line segments ~~includes for a group of edge points including~~ the plurality of edge points detected by said edge point detection means, on the basis of continuity of distance and direction between neighboring edge points.

4. (currently amended): ~~The computer-readable medium~~A device for detecting a road traveling lane as described in claim 1, wherein said segment group producing means determines ~~that there is~~ wherein a predetermined relationship, to be processed as one group is determined, when there is another line segment in an area of the predetermined distance and direction relative to a predetermined line segment, in a group of line segments based on said plurality of line segments.

5. (currently amended): ~~The computer-readable medium~~ A device for detecting a road traveling lane as described in claim 1, wherein ~~said curve detection means applies a curve-fitting is applied to the grouped line segments, to detect said curve.~~

6. (currently amended): ~~The computer-readable medium~~ A device for detecting a road traveling lane as described in claim 1, wherein, ~~said lane boundary position defining means determines if said line segments have a predetermined length and cycle in a longitudinal direction or a lateral direction to provide a block-like marking line, and removes said block-like marking line is removed from a lane boundary to be, when said lane boundary position defining means determines affirmatively, and wherein said lane boundary position defining means determines that the curve provided outside of said block-like marking line relatively to the center of said traveling lane is determined to be said boundary of said traveling lane.~~

7. (currently amended): ~~The computer-readable medium~~ A device for detecting a road traveling lane as described in claim 1, wherein ~~said edge point detection means detects the plurality of edge points on the image is detected picked up by said image pickup means, and makes a reverse projection of coordinate data of the plurality of edge points is made on a 3-dimensional road surface coordinate, to provide said plurality of edge points.~~

8. (currently amended): ~~A computer-readable medium having embodied thereon a computer program for a method of~~ A device for detecting a road traveling lane, from images continuously picked up on the road by image pickup means, the method comprising:

~~edge point detection means for detecting a plurality of edge points from a contour on the~~
images;

~~curve detection means for detecting curves fitted to the plurality of edge points detected~~
by said edge point detection means;

segment group producing means for grouping groups of edge points contributed to the
~~detected~~ curves ~~detected by said curve detection means~~; to produce segment groups; and

~~lane boundary position defining means for comparing a plurality of curves distributed in~~
the vicinity of right and left lane boundaries out of the ~~detected~~ curves ~~with the segment groups~~
~~detected by said curve detection means~~, with the segment groups produced by said segment
group producing means, to define a position of one curve as an innermost marking line, when a
segment group produced for a curve closest to a center of said traveling lane indicates a
predetermined length and repeated cycle, and define a position of a neighboring curve outside of
said innermost marking line relatively to the center of said traveling lane, as a position of a
boundary of said traveling lane.

9. (currently amended): The computer-readable medium ~~A device for detecting a road~~
~~traveling lane as described in claim 8, wherein said segment group producing means provides an~~
edge histogram is provided for the groups of edge points provided for the curves detected by said
curve detection means, and groups the groups of edge points contributed to peaks of said
histogram, to produce the segment groups.

10. (currently amended): ~~The computer-readable medium~~A device for detecting a road traveling lane as described in claim 9, wherein said lane boundary position defining means determines if the peaks of said histogram have a predetermined length and cycle in a longitudinal direction or a lateral direction to provide a block-like marking line, ~~and removes said block-like marking line~~ is removed from a lane boundary to be, when said lane boundary position defining means determines affirmatively, and wherein said lane boundary position defining means ~~determines that~~ the curve provided outside of said block-like marking line relatively to the center of said traveling lane is determined to be said boundary of said traveling lane.

11. (currently amended): ~~The computer-readable medium~~A device for detecting a road traveling lane as described in claim 8, wherein said edge point detection means detects the plurality of edge points is detected ~~on the image picked up by said image pickup means~~, and ~~makes a reverse projection of coordinate data of the plurality of edge points~~ is made on a 3-dimensional road surface coordinate, to provide said plurality of edge points.